Box 104C7

SANTA CLARA VALLEY
WATER DISTRICT

PLANNING STUDY
for
UPPER SILVER CREEK

ZONE E-1

Project Number 40038

May 1974

SANTA CLARA VALLEY
WATER DISTRICT

PLANNING STUDY
for
UPPER SILVER CREEK
ZONE E-1 (East)

May 1974

J. T. O'Halloran General Manager	L. C. Fowler Chief Engineer

Report Prepared by Design and
Construction Unit Staff

John H. Sutcliffe
Project Engineer

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Santa Clara Valley Water District

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SAN JOSE, CALIFORNIA 95118
TELEPHONE (408) 265-2600

April 9, 1974

Honorable Board of Directors
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, California 95118

Gentlemen:

Transmitted herewith is the Engineers' Report on the Study of Proposed Flood Control Improvements for Upper Silver Creek Diversion Project No. 40038 in Zone E-1 (East) of the District. This study revises a portion of the report on Silver Creek Diversion Improvement Project No. 40038 prepared for the District in 1969.

The study describes a modification to the inlet works of Silver Creek Diversion Channel. The proposed work consist of modifying the transition into the existing diversion channel, and constructing diversion levees. The limits of flooding for the natural floodplain have been also defined in the study for a short distance upstream. The cost of the proposed improvements is estimated to be $34,000.

The proposed work in conjunction with existing damming of the floodplain by others will prevent major flooding of the existing development in the area adjacent to this reach of Upper Silver Creek.

I concur with the study as presented and recommend a public hearing be held as a prerequisite to the construction of the proposed improvements.

Sincerely yours,

John T O'Halloran

John T. O'Halloran
General Manager

Attachment

AN EQUAL OPPORTUNITY EMPLOYER

Introduction

This study was prepared in order to revise a portion of the "Report on Proposed Improvements on Silver Creek Diversion" prepared for the District and adopted by the Board of Directors on November 25, 1969.

Diversion to Coyote Creek of the about six square miles of the Upper Silver Creek Watershed is one of the most effective steps that can be taken to relieve flooding potentials on Lower Silver Creek where intense urbanization has covered the floodplain.

The diversion project called for concrete channel lining from Coyote Creek upstream to the crossing of Silver Creek Road, then modified floodplain treatment upstream to a second crossing of Silver Creek Road where a sediment control facility could be located if found to be necessary.

Because of funding limitations, construction work was carried out in stages. The first stage accomplished the tunnel under Bayshore Freeway. The second stage, completed in November 1972, consisted of excavation and concrete lining of a channel from Coyote Creek to a point about 1200 feet westerly of Silver Creek Road. The natural channel makes a turn northerly at this point and the new diversion channel was connected to it at the turn. At this time flooding could still occur downstream since the natural floodplain is very much wider than the diversion channel and without supplemental levee work to dam the floodplain, there could not be complete capture of the design flood.

The reach of Silver Creek Diversion contained in this study extends from approximately 1,200 feet westerly of Silver Creek Road to about 1,500 feet upstream of that crossing.

The proposed modification to the project follows a reevaluation of the 1969 proposal after the local public expressed a desire to leave the upper reaches of the stream in as natural a condition as possible.

During the period when the project was being reevaluated a housing development just downstream of the point of diversion constructed a levee which effectively blocked any flooding of the area. The levee however was not constructed on District property and is only of an interim nature. Additional flood control measures will consist of constructing a levee and those appurtenances required to effectively transition the flood flows into the existing concrete trapezoidal diversion channel.

This course of action would not alleviate the existing potential for flooding at Silver Creek Road and on the Weld property immediately adjacent to the Creek; however, flooding would not be more extensive on the Weld property since the existing diversion channel has adequate capacity to remove the design flood from the property.

The potential for flooding of Silver Creek Road during the design flood to a depth of less than 1-1/2 feet for periods of probably less than a day is acceptable to the City of San Jose. Very little development is served by the road at this time and there are alternative routes to serve these properties. Thus, expensive enlargement of the present culvert to reduce potential flooding of the road is not warranted.

Future City plans call for replacement of Silver Creek Road with a parallel road to be known as Yerba Buena Road. The District will enter into an agreement with the City of San Jose whereby the District will maintain that portion of the creek adjacent to Yerba Buena Road after it is constructed. The roadway construction will confine the natural floodplain to a smaller area or modified floodplain. This is acceptable from a flood control standpoint and will not increase downstream flooding.

This report reflects the ideas obtained from meetings with the local citizenry and the City of San Jose.

Description of Watershed

Silver Creek watershed is shown on Plate 2, a general topographic map of the area. The watershed is long and narrow, about 5,000 feet wide and six miles in length comprising an area of 3,590 acres (5.6 square miles). The basin has a mean annual precipitation of approximately 15 inches.

The drainage area is located entirely within the northwest-southeast oriented ridge which projects onto the floor of the South Santa Clara Valley. Bedrock in the upper one-third of the watershed consists of variable amounts of sandstone, shale and serpentine with a residual soil of silt, silty clay and clayey gravel forming the area of low relief east of the creek.

Although the top soil locally is relatively permeable, runoff from bedrock and residual soil west of the creek is rapid with high erodability of the soil cover. In the alluvial soils east of the creek, and in the channel deposits of the creek itself the infiltration rate is moderate to rapid.

The native growth in the watershed is a fairly heavy cover of grass with some trees and shrubs in the canyons. This type of cover has a considerable effect in reducing runoff for low rainfall intensities but has little effect on the runoff from high intensity rainfall that produces the one-hundred year design flood of 950 cfs.

In computing the flood flows for the design of the proposed flood control improvements, the above characteristic factors of the watershed were considered.

Project Description

The proposed flood control measures of diverting the entire flow of Upper Silver Creek into the existing diversion channel which outfalls into Coyote Creek near Tuers Road and Alvernaz Drive.

The structural improvements consist of (1) a 150 foot long earth levee, a maximum of 6 feet high on the south side of the creek in order to divert the flow into the existing reinforced concrete channel and rock riprap slope protection to prevent erosion of the above levee and that portion of the floodplain which outfalls into the channel and (2) a 350 foot long earth levee, a maximum of 6 feet high, for the purpose of preventing flooding of the downstream development and for diverting the floodplain flow into the channel. The levee side slopes will be protected with rock riprap.

The reach of Silver Creek immediately upstream of (the end of) this study that will be subject to flooding is indicated on Plate 3 and includes Silver Creek Road which will experience periodic inundation during peak flows.

The proposed Yerba Buena Road as shown on Plate 3 will be constructed on the fringe of the natural floodplain area and will confine the flow to the area southerly of its alignment. This alignment is consistent with District policy and will not increase downstream flooding.

The above construction works will provide protection from flooding to areas along Silver Creek by completing the diversion project.

Conclusions and Recommendations

As a result of the investigation of alternative solutions to flooding on Upper Silver Creek the following conclusions and recommendations are made:

1. The inlet works into the existing concrete diversion need to be constructed to complete the diversion of flood waters from the natural channel of Silver Creek.

2. The current study ends immediately above the point of diversion, thereby revising the 1969 plans by deleting that portion of Silver Creek up to the second crossing of Silver Creek Road.

3. The housing development immediately downstream of the diversion constructed an interim levee which protected itself as well as all other downstream development from flooding. The interim levee will be replaced so as to conform with our design standards.

4. The 1969 adopted plan for the reach immediately upstream of the diversion to the downstream crossing of Silver Creek Road called for a concrete lined trapezoidal channel. This flood control improvement is now unnecessary, therefore, this study ends at a point downstream of this reach.

5. The study proposals will have the least effect on the environment.

6. The study proposals consider the desires of the citizens from the surrounding community.

7. The estimated construction cost including engineering, contingencies and right of way is $34,000.

8. The study proposals can be financed within the existing East Zone tax structure.

Based on the above conclusions it is recommended that the flood control improvement as proposed in this study be approved as a modification to the plan for Silver Creek Diversion adopted by the Board on November 25, 1969.

Submitted,

John H. Sutcliffe

John H. Sutcliffe
Associate Civil Engineer

APPROVAL RECOMMENDED:

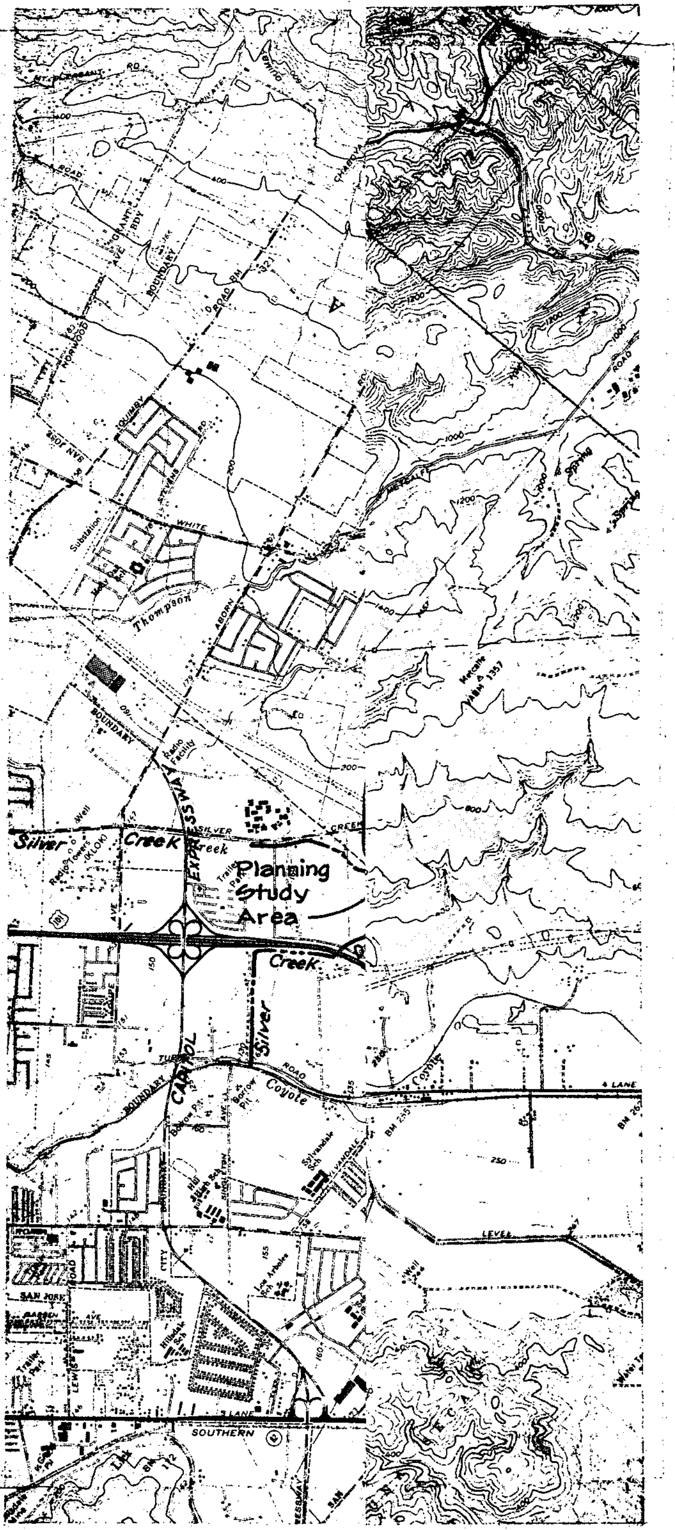
John L. Richardson

Head, Project Development Branch

APPROVED:

George Korbay

Design and Construction Manager



REFER TO TRACING FOR LATEST REVISION

REV.	DESCRIPTION	SUB	APPR.

REFERENCE INFORM

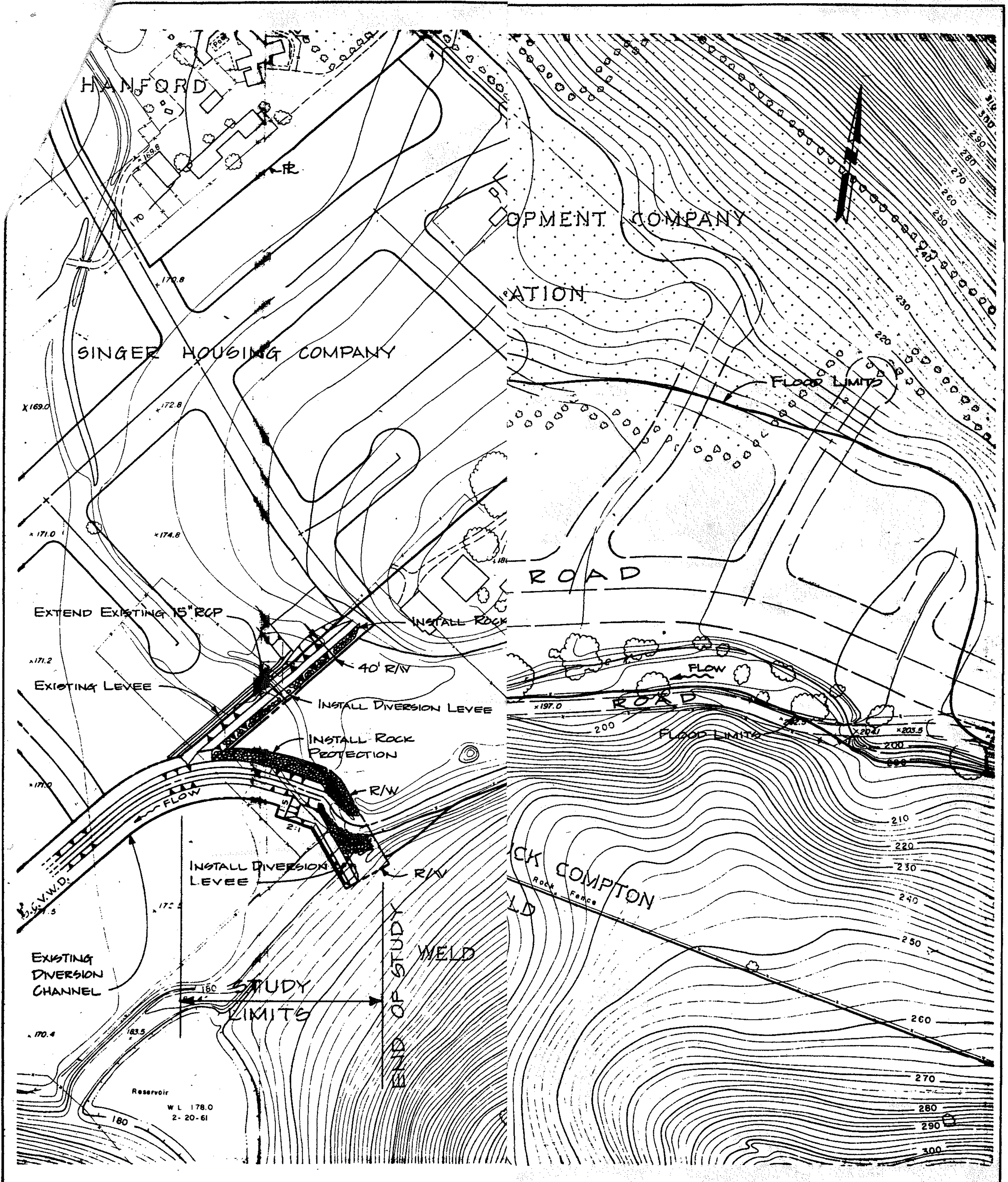
MAP AND GENERAL PLANS

ZONE E 1 (EAST) PLANNING STUDY NO.4038

- UPPER SILVER CREEK -
WATERSHED

SCALE
AS SHOWN

PLATE
2
OF 3



REFER TO TRACING FOR LATEST REVISION

REV.	DESCRIPTION	SUB.	APPR.

REFERENCE INFOR

UPPER SILVER CREEK
FLOODPLAIN

SCALE
1" = 100'

PLATE
3
OF 3